

CLAIMS

1. An aqueous preservation medium for preserving biological materials, comprising:

(a) platelets;

5 (b) at least one polyhydroxy compound, where the total amount of polyhydroxy compound in the medium is from about 5% to about 60% by weight of the medium; and

(c) phosphate ions, where the total amount of phosphate ions in the medium is such that the molar ratio of phosphate ions to hydroxyl groups in the polyhydroxy
10 compound is from about 0.025 to about 0.625.

2. The aqueous preservation medium of claim 1, where the pH of the medium is from about 5 to about 10.

3. The aqueous preservation medium of claim 1, where the polyhydroxy compound is selected from a group consisting of monosaccharides, disaccharides, and
15 polysaccharides.

4. The aqueous preservation medium of claim 3, where the polyhydroxy compound is trehalose.

5. The aqueous preservation medium of claim 1, where the total amount of polyhydroxy compound in the medium is from about 10% to about 30% by weight of the
20 medium.

6. The aqueous preservation medium of claim 3, where the total amount of polyhydroxy compound in the medium is from about 10% to about 30% by weight of the medium.

7. The aqueous preservation medium of claim 1, where the molar ratio of phosphate ions to hydroxyl groups in the polyhydroxy compound is from about 0.0375 to about 0.625.

8. The aqueous preservation medium of claim 1, further comprising albumin.

5 9. The aqueous preservation medium for preserving biological materials, comprising:

(a) platelets;

(b) trehalose, where the trehalose is present in an amount from about 5% to about 60% by weight of the medium; and

10 (c) phosphate ions, where the total amount of phosphate ions in the medium is such that the molar ration of phosphate ions to trehalose is from about 0.2 to about 5.

10. The aqueous preservation medium of claim 9, where the trehalose is present in an amount from about 10% to about 30% by weight of the medium.

15 11. The aqueous preservation medium of claim 10, where the pH is from about 5 to about 10.

12. The aqueous preservation medium of claim 9, where the molar ratio of phosphate ions to trehalose is from about 0.3 to about 5.

13. A method of preparing a preserved biological material composition, comprising:

20 (a) forming an aqueous preservation medium comprising (i) platelets; (ii) at least one polyhydroxy compound, where the total amount of polyhydroxy compound in the medium is from about 5% to about 60% by weight of the medium; and (iii) phosphate ions, where the total amount of phosphate ions in the medium is such that the molar

ratio of phosphate ions to moles of hydroxyl groups in the polyhydroxy compound is from about 0.025 to about 0.625; and

(b) preserving the aqueous preservation medium using at least one preservation process.

5 14. The method of claim 13, where the preservation processes are one or more processes selected from the group consisting of freezing, freeze-drying, ambient-air drying, vacuum-drying, and spray drying.

 15. The method of claim 13, where the polyhydroxy compound is selected from a group consisting of monosaccharides, disaccharides, and polysaccharides.

10 16. The method of claim 13, where the polyhydroxy compound is trehalose.

 17. The method of claim 13, where the total amount of polyhydroxy compound in the medium is from about 10% to about 30% by weight of the medium.

 18. The method of claim 13, where the molar ratio of phosphate ions to moles of hydroxyl groups in the polyhydroxy compound is from about 0.0375 to about 0.625.

15 19. The method of claim 13, where the medium further comprises albumin.

 20. A method of preparing a preserved biological material composition comprising:

 (a) forming an aqueous preservation medium comprising (i) platelets; (ii) trehalose where the total amount of polyhydroxy compound in the medium is from
20 about 5% to about 60% by weight of the medium; and (iii) phosphate ions, where the total amount of phosphate ions in the medium is such that the molar ratio of phosphate ions to trehalose is from about 0.2 to about 5; and

(b) preserving the aqueous preservation medium using at least one preservation process.

21. The method of claim 20, where the preservation processes are one or more processes selected from the group consisting of freezing, freeze-drying, ambient-air drying,
5 vacuum-drying, and spray drying.

22. The method of claim 20, where the trehalose is present in an amount from about 10% to about 30% by weight of the medium.

23. The method of claim 22, where the pH is from about 5 to about 10.

24. The method of claim 23, where the molar ratio of phosphate ions to trehalose
10 is from about 0.3 to about 5.

25. A preserved biological material composition comprising:

(a) platelets;

(b) at least one polyhydroxy compound, where the total amount of polyhydroxy compound in the composition is about 30% to about 60% by weight of the
15 composition; and

(c) phosphate ions, where the total amount of phosphate ions in the composition is about 2 to about 20% by weight of the composition.

26. The preserved biological material composition of claim 25, further comprising human serum albumin, where the total amount of human serum albumin in the composition is
20 from about 30 to about 50% by weight of the composition.

27. The preserved biological material composition of claim 25, wherein the polyhydroxy compound is trehalose.

28. A preserved biological material composition, comprising:

- (a) platelets;
- (b) at least one polyhydroxy compound, where the total amount of polyhydroxy compound is about 0.36 to about 60 percent by weight of the medium; and
- (c) phosphate ions, where the total amount of phosphate ions is such that the
5 molar ratio of phosphate ions to hydroxyl groups in the polyhydroxy compound is about 0.01 to about 0.625.

29. The preserved biological material composition of claim 28, wherein the polyhydroxy compound is trehalose.

30. The preserved biological material composition of claim 28, further comprising
10 albumin.

31. An aqueous preservation medium for preserving biological materials, comprising:

- (a) platelets;
- (b) at least one polyhydroxy compound, where the concentration polyhydroxy
15 compound in the medium is from about 10 mM to about 300 mM; and
- (c) phosphate ions, where the concentration of phosphate ions in the medium is about 5 mM to about 90 mM.

32. The aqueous preservation medium of claim 31, further comprising albumin.

33. The aqueous preservation medium of claim 31, wherein the polyhydroxy
20 compound is trehalose.

34. A method of preparing a preserved biological material composition, comprising:

(a) incubating platelets in a first medium comprising (i) at least one polyhydroxy compound, where the concentration of polyhydroxy compound is from about 20 to about 500 mM; and (ii) phosphate ions, where the concentration of phosphate ions is from about 5 to about 90 mM;

5 (b) removing the first medium;

(c) adding the incubated platelets to a second medium comprising (i) at least one polyhydroxy compound, where the concentration of polyhydroxy compound is from about 20 mM to about 500 mM; and (ii) phosphate ions, where the concentration of polyhydroxy compound is from about 5 to about 90 mM phosphate ions, wherein the
10 molar ratio of phosphate ions to hydroxyl groups in the polyhydroxy compound is about 0.01 to about 0.625 in the preserved biological material composition; and

(d) preserving the resulting composition using at least one preservation process.

35. The method of claim 34, wherein the second medium further comprises albumin.

15 36. The method of claim 35, wherein the amount of albumin is from about 1% to about 10% by weight of the medium.

37. The method of claim 31, wherein the preservation process is freezing.